



Total Phosphorus Permit Implementation Guidance 1.0

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Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program, Watershed Protection Section

Total Phosphorus Permit Implementation Guidance

The intent of the Total Phosphorus Permit Implementation Guidance (guidance) is to establish a procedure for implementing total phosphorus requirements in Missouri State Operating Permits in accordance with 10 CSR 20-7.015(9)(B)2. The establishment of these procedures does not preclude the Missouri Department of Natural Resources from implementing alternative derivation approaches on a site-specific basis.

Intent and Background of Rule

Nutrients, such as total phosphorus (TP) and total nitrogen (TN), can lead to increased production of algae and aquatic plants in aquatic ecosystems, subsequently causing water quality issues such as turbidity, algal toxin exposure, and low dissolved oxygen. The Missouri Nutrient Loss Reduction Strategy (NLRS) was developed and published in 2014 in response to the 2008 Gulf Hypoxia Action Plan, which established a goal for reducing the loss of nitrogen and phosphorus to the Gulf of Mexico by 45% by 2035. Phosphorus and nitrogen are found in surface waters and serve as a primary nutrient for aquatic species. Major sources of nutrient pollution to streams and lakes include agricultural runoff, wastewater treatment plants, on-site wastewater treatment systems, industrial sources, and urban runoff.

The department identified phosphorus as having a primary impact on eutrophication in surface waters. In an effort to reduce phosphorus loading to Missouri's waters, the department established 10 CSR 20-7.015(9)(B)2, which requires a target reduction level for all domestic point sources with a design flow of greater than or equal to one million gallons per day ($\geq 1\text{MGD}$), and all industrial facilities categorized as major that typically discharge phosphorus in their industrial wastewater. Excluded from this rule are facilities with effluent limits established in accordance with 10 CSR 20-7.015(3)(E) and (3)(F) – discharges to Lake Taneycomo and Table Rock Lake, 10 CSR 20-7.015(9)(A)4. and 5. – or where a more stringent TP limit has been established, such as through an antidegradation analysis or a total maximum daily load. This effluent regulation applies to approximately 92% of point source wastewater flows in the state and impacts approximately 141 facilities. With full implementation, the anticipated statewide reduction in TP loading from Missouri point sources is over 60%.

When this rule became effective, the department notified all impacted facilities via letter of applicable implementation dates. Permits expiring after the effective date of this rule will have the appropriate requirements incorporated into the next permit renewal. Facilities may request an alternative implementation date in accordance with 10 CSR 20-7.015(9)(B)2.D.(IV).

Establishing the Target Reduction Level

Facilities subject to target reduction levels in accordance with 10 CSR 20-7.015(9)(B)2. will choose one of the following target reduction level options for compliance with this regulation:

1. Concentration-based: 1.0 milligrams per liter (mg/L) as an Annual Average or an Annual Total load (pounds per year (lbs/yr) based on actual flow;

2. Mass-based: 1.0 mg/L at design flow as an Annual Total load;
3. An overall reduction of TP load discharged by 75% based on a one-time calculation of two (2) years of representative monitoring or process influent and effluent data; or
4. An overall reduction of annual load of TP discharged by 75% based on a one-time calculation of adequately representative effluent data.

In the absence of an approved alternative implementation date established in an operating permit, target reduction levels must be implemented no later than the following:

- January 1, 2029, for domestic point sources with a facility design flow >15 MGD
- January 1, 2033, for domestic point sources with a facility design flow ≤ 15 MGD ≥ 1 MGD
- January 1, 2034, for industrial facilities

Facility Renewals within 5 years of Implementation Date:

Permit writers will review permit renewal applications to determine if the facility is subject to 10 CSR 20-7.015(9)(B)2., and the applicable implementation date. If the facility must comply with 10 CSR 20-7.015(9)(B)2. within 5 years of projected permit issuance, the permit writer must take steps to ensure compliance is met.

- The permit writer must first determine the target reduction level option the facility intends to implement and the treatment technology the facility intends to use to obtain compliance, or if an alternative implementation schedule is applicable to the facility.
- Ensure the facility has the representative data necessary for the selected target reduction level option. If representative data is not available, the facility's permit must, in consultation with the permittee, identify a timeframe for the facility to provide weekly monitoring data necessary for the department to establish a permitted target reduction level.
- Permit applications need to include confirmation that the permittee intends to comply with established implementation dates, or the basis for the request for an alternative implementation date and the proposed alternative implementation schedule.
- If applicable, permit writers will draft plans on how permit conditions will be established and assessed for combined sewer systems (CSSs).
- The permit writer must ensure all necessary applications and forms needed for participation in the Missouri Point Source Trading Program, or the Missouri Nonpoint Source Trading Program, are submitted if the permittee wishes to partake in nutrient trading.

Facility Renewals not within 5 years of Implementation Date:

Permit writers should review permit renewal applications to determine if the facility is subject to 10 CSR 7.015(9)(B)2., and what implementation date applies. If upon the projected date of permit issuance the applicable facility compliance date does not fall within the permit cycle (greater than five years from permit issuance date), the permit writer must take the following steps to ensure compliance will be met within the appropriate timeframe.

- The permit writer will determine possible target reduction level options the facility may consider utilizing, and review if the facility has adequate representative data to establish a target reduction level. If representative data is required, weekly influent and/or effluent monitoring will be added to the permit.
- The permit writer will review facility treatment plans, and establish a specified timeframe for the installation of the selected treatment and/or the submittal of a nutrient trading plan.
- Permit applications need to include confirmation that the permittee intends to comply with established implementation dates, or the basis for the request for an alternative implementation date and the proposed alternative implementation schedule.
- If applicable, permit writers will draft plans on how permit conditions will be established and assessed for CSSs.
- The permit writer must ensure all necessary applications and forms needed for participation in the Missouri Point Source Trading Program, or the Missouri Nonpoint Source Trading Program, are submitted if the permittee wishes to partake in nutrient trading.

Nutrient Credits

Nutrient credits may be used to comply with the target reduction levels per 10 CSR 20-7.015(9)(B)2.E. Facilities wishing to utilize nutrient credits and nutrient trading must submit the appropriate information to the department such as a Point Source Nutrient Credit Usage Plan or Nonpoint Source Nutrient Credit Usage Plan. This information should be submitted along with the facility's application. If the facility wishes to partake in the Missouri Nutrient Trading Program after permit issuance, a permit modification is required.

Assessing Compliance

Facilities will monitor for TP weekly (establishing a weekly average) and calculate the monthly average concentration or load based on the weekly averages. For facilities not utilizing nutrient credits, compliance will be assessed in December of each calendar year, to be reported January 28 with other annual reporting requirements. For facilities utilizing nutrient credits, compliance will be assessed at the end of the Annual Reconciliation Period (March 28) of each calendar year.

The department may consider net calculations for phosphorus and source water on a case-by-case basis.

1. Concentration-Based Compliance: Calculating the Annual Average

Facilities that choose this option will sample weekly and report a monthly average (based on the weekly average) TP concentration. After the first year of sampling, each month the permittee will calculate, for monitoring purposes only, the 12-Month Rolling Average utilizing reported Discharge Monitoring Report (DMR) data from the previous 12 months. Compliance will be determined by the Annual Average concentration in December of each calendar year. For facilities utilizing compliance option 1 (concentration-based) that wish to conduct nutrient trading, permit writers will convert the 1.0 mg/L concentration-based target reduction level to an equivalent mass-based value using up to five years of actual flow data. See Mass-Based Compliance: Calculating the Annual Total and Nutrient Credits for Compliance for information regarding mass-based compliance utilizing nutrient trading and credit generation.

Example. Concentration-based compliance. TP effluent concentration (mg/L) is monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (mg/L), and a 12-Month Rolling Average (mg/L). Compliance is assessed in December of each year as an Annual Average. The TP target reduction level is 1.0 mg/L. The Monthly Average (mg/L) may exceed the target reduction level; however, the facility is in compliance with the December 12-Month Rolling Average for 2020 and 2021.

	Effluent Conc (mg/L)	12-Month Rolling Average (mg/L)			Effluent Conc (mg/L)	12-Month Rolling Average (mg/L)
Jan-20	1.3	0.875		Jan-21	0.4	0.917
Feb-20	0.6	0.883		Feb-21	0.5	0.908
Mar-20	0.7	0.883		Mar-21	0.8	0.917
Apr-20	1	0.892		Apr-21	1	0.917
May-20	1.8	0.950		May-21	0.9	0.842
Jun-20	1.3	0.950		Jun-21	1.9	0.892
Jul-20	1.1	0.975		Jul-21	1.4	0.917
Aug-20	0.8	0.967		Aug-21	1.1	0.942
Sep-20	0.7	0.933		Sep-21	0.9	0.958
Oct-20	0.9	0.892		Oct-21	0.6	0.933
Nov-20	1	0.958		Nov-21	0.5	0.892
Dec-20	0.7	0.992		Dec-21	0.3	0.858

2. Mass-Based Compliance: Calculating the Annual Total

Facilities that choose this option will sample weekly and report a daily maximum and monthly average (based on the weekly average) TP concentration, as well as reporting the total monthly flow. The permittee will then calculate the monthly TP load utilizing **Equation 1** below. After the first year of sampling, each month the permittee will calculate, for monitoring purposes only, the Phosphorus 12-Month Rolling Total (lbs/yr) utilizing DMR data from the previous 12 months. Compliance will be determined by the Annual Total in December of each calendar year. The TP target reduction level will be determined by the permit writer utilizing **Equation 2**. See Nutrient Credits for Compliance for information regarding nutrient trading and credit generation.

Equation 1. Calculating Monthly TP Load.

$$\text{Monthly Average TP (mg/L)} * \text{Total Monthly Flow (MG)} * 8.34 \text{ lbs/gallon} = \text{Monthly TP Load (lbs)}$$

Equation 2. Calculating Annual TP Target Reduction Level for Permitted Target Reduction Level.

$$\text{TP Target reduction level (1.0 mg/L)} * \text{Design Flow (MGD)} * 8.34 \text{ lbs/gallon} * 365 \text{ days} = \text{Maximum Annual TP Load (lbs)}$$

Example. Mass-based compliance with monitoring for a 12-Month rolling total monitoring, and an end of year and Annual Total assessed for compliance. TP effluent concentration (mg/L) is monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (mg/L), Monthly Total (lbs/month), and a 12-Month Rolling Total (lbs/yr). This table assumes a design flow of 14 MGD, resulting in an Annual TP target reduction level of 42,617.4 lbs. The Effluent Concentration (mg/L) and the 12-Month Rolling Total are monitored monthly and may exceed the target reduction level; however, the facility is in compliance with the Annual Total for 2019 and 2020, assessed in December.

	Effluent Concentration (mg/L)	12-Month Rolling Average (mg/L)	Flow (MGD)	Total Monthly Flow (MG)	Lbs/ Month	Phosphorus Annual Total (lbs/yr)
Jan-19	0.6		10.2	316.2	1,582.26	
Feb-19	0.5		10.5	294	1,225.98	
Mar-19	0.7		10.3	319.3	1,864.07	
Apr-19	0.9		10.7	321	2,409.43	
May-19	1.1		11.1	344.1	3,156.77	
Jun-19	1.3		13.4	402	4,358.48	
Jul-19	0.8		14.5	449.5	2,999.06	
Aug-19	0.9		14.3	443.3	3,327.41	
Sep-19	1.1		12.1	363	3,330.16	
Oct-19	1.4		11.8	365.8	4,271.08	
Nov-19	0.2		10.8	324	540.43	
Dec-19	0.3	0.816666667	11.5	356.5	891.96	29,957.11
Jan-20	1.2	0.866666667	9.8	303.8	3,040.43	31,415.28
Feb-20	0.6	0.875	10.2	285.6	1,429.14	31,618.44
Mar-20	0.7	0.875	10.8	334.8	1,954.56	31,708.93
Apr-20	1	0.883333333	11.2	336	2,802.24	32,101.74
May-20	3.1	1.05	12.6	390.6	10,098.57	39,043.54
Jun-20	1.9	1.1	13.1	393	6,227.48	40,912.54
Jul-20	1.6	1.166666667	10.9	337.9	4,508.94	42,422.41
Aug-20	0.8	1.158333333	11.2	347.2	2,316.52	41,411.52
Sep-20	0.7	1.125	11.7	351	2,049.14	40,130.50
Oct-20	0.9	1.083333333	12.1	375.1	2,815.50	38,674.92
Nov-20	1	1.15	9.7	291	2,426.94	40,561.42
Dec-20	0.7	1.183333333	10.5	325.5	1,900.27	41,569.73

3. Influent to Effluent Reduction

Facilities that choose this option will sample weekly for a period of two years, if needed, to obtain representative influent data. To calculate the target reduction level, the two years of representative influent data will be used to calculate a Phosphorus 12-Month Annual Total (lbs/yr) for December of each year of data. These December 12-Month Annual Total (lbs/yr) values will be averaged to yield the average annual influent load (lbs/yr). The permitted target reduction level will be calculated by taking 25% (a 75% reduction) of the average annual influent load (**Equation 3**). This is a one-time calculation of the representative data. Monitoring and reporting requirements will be the same as option 2, mass-based compliance. See Nutrient Credits for Compliance for information regarding nutrient trading and credit generation.

Equation 3. Calculating Annual TP Target Reduction Level for Permitted Target Reduction Level Utilizing 75% Influent Reduction.

$$0.25 * \text{Average Annual Influent Load (lbs/yr)} = \text{TP Target Reduction Level (lbs/yr)}$$

$$0.25 * \text{XXX lbs/yr} = \text{XXX lbs/yr}$$

4. Effluent Reduction

Facilities that choose this option will collect data to obtain up to five years of adequately representative effluent data. To calculate the target reduction level, the representative effluent data will be used to calculate a Phosphorus Annual Total (lbs/yr) for December of each year of data. These December Annual Total (lbs/yr) values will be averaged to yield the average annual effluent load (lbs/yr). The permitted target reduction level will be calculated by taking 25% (a 75% reduction) of the average annual effluent load (**Equation 4**). This is a one-time calculation of representative data. Monitoring and reporting requirements will be the same as option 2, mass-based compliance. See Nutrient Credits for Compliance for information regarding nutrient trading and credit generation.

Equation 4. Calculating Annual TP Target Reduction Level for Permitted Target Reduction Level Utilizing 75% Effluent Reduction.

$$0.25 * \text{Average Annual Effluent Load (lbs/yr)} = \text{TP Target Reduction Level (lbs/yr)}$$

$$0.25 * \text{XXX lbs/yr} = \text{XXX lbs/yr}$$

Nutrient Credits for Compliance

Facilities may utilize nutrient credits and nutrient trading per 10 CSR 20-7.015(9)(B)2.E. to achieve compliance with any target reduction level option. For facilities wishing to trade utilizing option 1, the concentration-based option, final target reduction levels will be calculated based upon the average of the previous representative actual flow data (up to five years) to convert the 1.0 mg/L target reduction level to a mass based limit that is equivalent to a 1.0 mg/L concentration-based target reduction level. While all target reduction level options can utilize nutrient trading as a method to obtain compliance, only options one and two can generate nutrient credits.

Facilities wishing to utilize nutrient trading will sample weekly and report a daily maximum and monthly average (based on the weekly average) TP concentration, as well as reporting the total monthly flow. The permittee will then calculate the monthly TP load utilizing **Equation 1** above.

After the first year of sampling, each month the permittee will calculate, for monitoring purposes only, the 12-Month Rolling Total utilizing DMR data from the previous 12 months. Approved nutrient credits may be subtracted from the 12-Month Rolling Total and reported each month to yield the Phosphorus 12-Month Rolling Total, After-Credit Limit (lbs/yr). Annual Phosphorus Credits (lbs/yr) will be reported yearly. Compliance will be determined based upon the Phosphorus Annual Total, After Credit Limit (lbs/yr), in December of each calendar year or during the Annual Reconciliation period ending March 28.

For facilities that wish to utilize the Missouri Nutrient Trading Program, the department shall add the special condition below to ensure a facility is accurately representing the nutrient credits used, accrued, acquired, and transferred.

Special Condition 1: It is a violation of permit requirements to knowingly misrepresent and/or misreport the acquisition, accrual, generation, transfer, or use of nutrient credits. This includes, but is not limited to, misrepresenting the amount of nutrient credits generated, misrepresenting the amount of nutrient credits accrued, misrepresenting the amount of nutrient credits acquired, or reporting the use of nutrient credits which are not or were not available to the facility at the time of the permit's compliance date.

For ease of calculation and reporting, the department has created a Nutrient Limit Calculator found at <https://dnr.mo.gov/water/what-were-doing/initiatives/mo-nutrient-trading-program>

Example. Compliance with target reduction level utilizing nutrient trading. The 12-Month Rolling Total may vary month to month; however, the facility is in compliance with the Rolling Total, After Credit Limit for 2019 and 2020, assessed in December.

$$\begin{aligned} \text{Average Annual Load (lbs.)} &= 617,256.77 \text{ lbs.} \\ 75\% \text{ reduction based target reduction level} &= \\ 0.25 * \text{Average Annual Effluent Load (lbs/yr)} &= \text{TP Target Reduction Level (lbs/yr)} = \\ 0.25 * 617,256.77 \text{ lbs.} &= \mathbf{154,314.19 \text{ lbs}} \end{aligned}$$

	Effluent Concentration (mg/L)	12- Month Rolling Average (mg/L)	Flow (MGD)	Total Monthly Flow (MG)	Lbs/ Month	Phosphorus 12- Month Rolling Total (lbs/yr)	Annual Phosphorus Credit (lbs/yr)	Phosphorus Annual Total (lbs/yr)
Jan-19	22		10.2	316.2	58,016.38			
Feb-19	21.5		10.5	294	52,717.14			
Mar-19	19.7		10.3	319.3	52,460.35			
Apr-19	17.5		10.7	321	46,849.95			
May-19	22.1		11.1	344.1	63,422.45			
Jun-19	18.5		13.4	402	62,024.58			
Jul-19	17		14.5	449.5	63,730.11			
Aug-19	20.2		14.3	443.3	74,681.86			
Sep-19	17.5		12.1	363	52,979.85			
Oct-19	14.3		11.8	365.8	43,626.04			
Nov-19	13.2		10.8	324	35,668.51			
Dec-19	11.5	17.92	11.5	356.5	34,191.92	640,369.14	490,000	150,369.14
Jan-20	21.3	17.86	9.8	303.8	53,967.64	636,320.40	490,000	146,320.40
Feb-20	19.5	17.69	10.2	285.6	46,447.13	630,050.39	490,000	140,050.39
Mar-20	17.8	17.53	10.8	334.8	49,701.73	627,291.77	490,000	137,291.77
Apr-20	20.8	17.81	11.2	336	58,286.59	638,728.41	490,000	148,728.41
May-20	16.4	17.33	12.6	390.6	53,424.71	628,730.67	490,000	138,730.67
Jun-20	18.5	17.33	13.1	393	60,635.97	627,342.06	490,000	137,342.06
Jul-20	21.7	17.73	10.9	337.9	61,152.47	624,764.41	490,000	134,764.41
Aug-20	17.5	17.50	11.2	347.2	50,673.84	600,756.39	490,000	110,756.39
Sep-20	16.5	17.42	11.7	351	48,301.11	596,077.65	490,000	106,077.65
Oct-20	15.8	17.54	12.1	375.1	49,427.68	601,879.29	490,000	111,879.29
Nov-20	13.2	17.54	9.7	291	32,035.61	598,246.38	490,000	108,246.38
Dec-20	12.8	17.65	10.5	325.5	34,747.78	598,802.24	445,000	153,802.24
Jan-21	13.1	16.97	10.7	331.7	36,239.55	581,074.15	445,000	136,074.15
Feb-21	15.6	16.64	10.9	305.2	39,707.74	574,334.77	445,000	129,334.77
Mar-21	19.8	16.81	11.8	365.8	60,405.29	585,038.32	445,000	140,038.32
Apr-21	20.5	16.78	12.3		63,087.93	589,839.66	445,000	144,839.66
May-21	24.9	17.49	13.4		86,264.46	622,679.41	445,000	177,679.41
Jun-21	23.8	17.93	12.5		74,434.50	636,477.94	445,000	191,477.94
Jul-21	17.8	17.61	11.5		52,923.14	628,248.61	445,000	183,248.61
Aug-21	17.6	17.62	10.8		49,143.28	626,718.06	445,000	181,718.06
Sep-21	14.3	17.43	10.3		36,851.96	615,268.91	445,000	170,268.91
Oct-21	15.4	17.40	11.2		44,592.98	610,434.21	445,000	165,434.21
Nov-21	13.5	17.43	11.2		37,830.24	616,228.84	445,000	171,228.84
Dec-21	11.8	17.34	10.2		31,117.87	612,598.94	460,000	152,598.94

Combined Sewer Systems (CSSs)

CSSs are sewers designed to convey rainwater, domestic sewage, and industrial wastewater in the same pipe. Due to the complexity of these systems, the existing CSSs in Missouri may submit alternate consideration and calculations for determining the design flow and the mass-based target reduction level.

Missouri Nutrient Trading Program

Permittees seeking to utilize nutrient trading in order to meet mass-based permitted target reduction level for TP are required to submit the following information to the department in order to be approved for nutrient trading for the designated monitoring period. Nutrient credits may be used to comply with effluent nutrient limits established in 10 CSR 20-7.015(3)(E),

(3)(F), (9)(A)4. and (9)(A)5. if generated within a restricted trading zone as defined by the Missouri Nutrient Trading Program.

Point Source to Point Source Trades, including Aggregate Assessment Plans:

1. Completed applicable Point Source Nutrient Credit Usage Plan

Nonpoint Source to Point Source Trades:

1. Completed Nutrient Trading Nonpoint Source Nutrient Credit Usage Plan that includes the following:
 - a. Overview of the nutrient credit project;
 - b. Projected credits that will be generated annually;
 - c. Proposed trade ratio(s) and calculations;
 - d. Implementation and nutrient credit tracking plans (i.e. legal agreements, tracking credits, annual review process, process for mitigating failing best management practices (BMPs);
 - e. Relevant financial analyses (i.e. implementation cost, external funding opportunities)
 - f. Project implementation schedule; and
 - g. Inspection and on-going maintenance requirements of Nonpoint Source BMPs
2. Completed Trade Accounting Worksheet
3. Completed Legal Contract to Trade, executed by Buyer and Seller
4. Verification and evidence of completed and installed practice
5. Evidence of existing Maintenance Agreements for existing Nonpoint Source BMPs

For more information on nutrient trading, please see the Missouri Nutrient Trading Program located at <https://dnr.mo.gov/document-search/draft-missouri-nutrient-trading-program>.

TP PIG Fact Sheet Language**Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions****TOTAL PHOSPHORUS TARGET REDUCTION LEVELS:**

Per 10 CSR 20-7.015(9)(B)2., total phosphorus target reduction levels apply to all domestic facilities with design flow greater than or equal to 1,000,000 gallons per day (1 MGD) and all industrial facilities categorized as major that typically discharge phosphorus in their industrial wastewater, except for facilities which already have more stringent phosphorus requirements as required by 10 CSR 20-7.015(3)(E), (3)(F), (9)(A)4., and (9)(A)5., for discharges to Lake Taneycomo, Table Rock Lake, a TMDL watershed with phosphorus allocations, or as addressed by antidegradation review, respectively.

- ✓ Not applicable; this is a domestic facility which does not have a design flow 1 MGD OR this is an industrial facility not categorized as major and does not typically discharge phosphorus in their industrial wastewater.
OR
- ✓ Not applicable; this facility has more stringent site specific TP limits based on the requirements for [Lake Taneycomo, Table Rock Lake, a TMDL watershed with phosphorus allocations, as addressed by antidegradation review] therefore target reduction levels are not required.

The Annual Reconciliation Period will occur between January 1 and March 28 of every year. Permittees utilizing nutrient credits will have until March 28 to use or purchase any nutrient credits necessary to meet their TP limits for the annual compliance period that ended in December. Permittees purchasing and using nutrient credits during the Annual Reconciliation period will have until March 28 to update or modify Credit Usage Plans or Aggregate Assessment Plans that address compliance for the annual compliance period that just ended and upcoming annual compliance periods.

The After Credit Limit is the effluent TP load after credits have been used.

10 CSR 20-7.015(9)(B)2.A. establishes four options for compliance with total phosphorus target reduction levels. These four options are:

1. 1.0 mg/L annual average;
2. Annual mass loading equal to 1.0 mg/L based on the design flow.
3. An overall reduction of total phosphorus from influent to effluent by 75%.
4. An overall reduction of annual load of total phosphorus discharged by 75%.

The implementation date for facilities with design flow greater than or equal to 1 MGD but less than 15 MGD is January 1, 2033 and January 1, 2034 for industrial facilities unless an alternative implementation date is requested per 10 CSR 20-7.015(9)(2)D.(IV).

Permittees shall submit the following on the next renewal application:

- Chosen compliance method.
 - If implementing compliance option 2, and the facility is a combined sewer system, permittees can request alternative considerations or calculations.
 - If implementing compliance option 3, at least two years of influent and effluent monitoring data is required.
 - If implementing compliance option 4, sufficient and representative data is required.
 - Alternative implementation date, if applicable.
 - Application for nutrient trading, if utilizing.
- ✓ Applicable; this facility is a domestic major with a design flow greater than or equal to 1 MGD but less than 15 MGD.
OR
- ✓ Applicable; this is an industrial facility categorized as major that typically discharges phosphorus in its industrial wastewater.

OR

- ✓ Applicable; this facility is a domestic major with a design flow greater than or equal to 15 MGD. This permit contains target reduction levels for total phosphorus based on compliance option 1/2/3/4, which the facility notified the department of being their chosen method on DATE. The facility intends to comply with the implementation date of January 1, 2029. OR This facility has requested and been approved for an alternative implementation date of DATE. See Derivation and Discussion section of the Fact Sheet

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Total Phosphorus.** Operating permit establishes a 1.0 mg/L Annual Average target reduction level. Effluent concentration (mg/L) is monitored weekly and reported monthly as a Daily Maximum, Monthly Average, and a 12-Month Rolling Average (mg/L). Compliance will be assessed once per year in December, calculated as an Annual Average of each calendar year. December compliance values are to be reported January 28 with other annual reporting requirements. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

OR

- **Total Phosphorus.** Operating permit establishes an annual target reduction level of 1.0 mg/L expressed as mass based effluent limit. This mass based effluent target reduction level was calculated utilizing representative flow data from the facility. Effluent concentration (mg/L) is monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (mg/L), Monthly Total (lbs/month), a 12-Month Rolling Total (lbs/year), and a 12-Month Rolling Total After-Credit Limit (lbs/year). Annual Phosphorus Credits (lbs/year) will also be reported yearly. Monitoring of monthly and annual pounds of phosphorus is required to track credit use and generation, and to ensure compliance with the target reduction level. For facilities not utilizing nutrient credits, compliance will be assessed in December of each calendar year, to be reported January 28 with other annual reporting requirements. For facilities utilizing nutrient credits, compliance will be assessed at the end of the Annual Reconciliation Period (March 28) of each calendar year. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

$$\text{Monthly TP (lbs)} = \text{Total Monthly Flow (MG)} * \text{Monthly Average Concentration (mg/L)} * 8.34 \text{ lbs/gallon}$$

$$\begin{aligned} \text{Annual Maximum Discharge limit (lbs/yr)} = \\ \text{Representative Actual Flow (MGD)} * \text{Max Effluent Concentration (mg/L)} * 8.34 \text{ lbs/gallon} * 365 \text{ (days/yr)} \\ \text{Actual Flow MGD} * 1.0 \text{ mg/L} * 8.34 \text{ lbs/gallon} * 365 \text{ days} = \text{XXX lbs/year} \end{aligned}$$

OR

- **Total Phosphorus.** Operating permit establishes a mass based target reduction level of XXXX lbs based upon a TP effluent concentration of 1.0 mg/L and the design flow of the facility. Effluent concentration (mg/L) is monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (mg/L), Monthly Total (lbs/month), a 12-Month Rolling Total (lbs/year), and a 12-Month Rolling Total After-Credit Limit (lbs/year). Annual Phosphorus Credits (lbs/year) will also be reported yearly. For facilities not utilizing nutrient credits, compliance will be assessed in December of each calendar year, to be reported January 28 with other annual reporting requirements. For facilities utilizing nutrient credits, compliance will be assessed at the end of the Annual Reconciliation Period (March 28) of each calendar year. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

Monthly TP (lbs) =

*Total Monthly Flow (MG) * Monthly Average Concentration (mg/L) **

Annual Maximum Discharge limit (lbs/yr) =

*Design Flow (MGD) * Max Effluent Concentration (mg/L) * 8.34 lbs/gallon * 365 (days/yr)*

*Design Flow MGD * 1.0 mg/L * 8.34 lbs/gallon * 365 days = XXX lbs/year*

OR

- **Total Phosphorus.** Operating permit establishes a mass based 75% total phosphorus target reduction level of XXXX lbs. based upon representative influent data to effluent data. This was calculated using representative influent data from DATE to DATE. The average of the previous XXX years of representative influent data calculated as Annual Totals (lbs/year) was used to calculate the average annual influent load which equals XXX lbs. A 75% reduction of this average annual influent load yields a target reduction level of XXX lbs. of effluent TP per year. Effluent concentration (mg/L) will be monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (mg/L), Monthly Total (lbs/month), a 12-Month Rolling Total (lbs/year), and a 12-Month Rolling Total After-Credit Limit (lbs/year). Annual Phosphorus Credits (lbs/year) will also be reported yearly. For facilities not utilizing nutrient credits, compliance will be assessed in December of each calendar year, to be reported January 28 with other annual reporting requirements. For facilities utilizing nutrient credits, compliance will be assessed at the end of the Annual Reconciliation Period (March 28) of each calendar year. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

*0.25 * Average Annual Influent Load (lbs/yr) = TP Target Reduction Level (lbs/yr)*

*0.25 * XXX lbs/year = XXX lbs/year*

OR

- **Total Phosphorus.** Operating permit establishes a mass based 75% TP target reduction level of XXXX lbs. based on representative effluent data from DATE to DATE. The average of the previous XXX years of representative influent data calculated as Annual Totals (lbs/year) was used to calculate the average annual effluent load, which equals XXX lbs. A 75% reduction of this average annual effluent load yields a target reduction level of XXX lbs. of effluent TP per year. Effluent concentration (mg/L) will be monitored weekly and reported monthly as a Daily Maximum (mg/L), Monthly Average (lbs/year), Monthly Total (lbs/year), a 12-Month Rolling Total (lbs/year), and a 12-Month Rolling Total After-Credit Limit (lbs/year). Annual Phosphorus Credits (lbs/year) will also be reported yearly. For facilities not utilizing nutrient credits, compliance will be assessed in December of each calendar year, to be reported January 28 with other annual reporting requirements. For facilities utilizing nutrient credits, compliance will be assessed at the end of the Annual Reconciliation Period (March 28) of each calendar year. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

*0.25 * Average Annual Effluent Load (lbs/yr) = TP Target Reduction Level (lbs/yr)*

*0.25 * XXX lbs/year = XXX lbs/year*

AND

- **Annual Phosphorus Credits.** Permittee shall report the generated and accrued credits in lbs/year. Credit reporting and trading shall be conducted in accordance with the most current department approved nutrient trading framework and guidance. See Missouri Nutrient Trading Program here: <https://dnr.mo.gov/document-search/draft-missouri-nutrient-trading-program>. The department has developed a calculator to assist permittees in the reporting requirements of this rule located at <https://dnr.mo.gov/sites/dnr/files/media/file/2023/06/2023-06-07-nutrient-limit-calculations-concentration-and-mass.xlsx>

Permit Example #1 – Concentration-based Compliance (No Credits)

Interim Table #1 (For facilities which do not have sufficient data, applicable prior to implementation date)

OUTFALL #00X	TABLE A-1 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the interim effluent limitations outlined in Table A-1 must be achieved as soon as possible but no later than <u>Effective Date + X years</u> . These interim effluent limitations in Table A-1 are effective beginning <u>Effective Date</u> and remain in effect through <u>Effective date + X years – 1 day</u> or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:					
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M					
Phosphorus, Total (TP)	mg/L	*	*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> .					

Interim Table #2 (For facilities which have sufficient data, applicable prior to implementation date)

OUTFALL #00X	TABLE A-2 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than Effective Date + X years . These interim effluent limitations in Table A-2 are effective beginning Effective Date + X years and remain in effect through Effective date + X years – 1 day or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	measured
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total 12-Month Rolling Average ‡	mg/L			*	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MONTH 28, 20XX .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Ω Total flow is measured and submitted to the department for purposes of calculating statewide mass-based loading.

‡ 12-Month Rolling Average is calculated by averaging the previous 12 monthly averages from the calendar year.

Permit Example #1 – Concentration-based Compliance (No Credits), continued

Final Table

OUTFALL #00X	TABLE A-3 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations in Table A-3 shall become effective on <u>Effective Date + X years</u> and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	measured
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total 12-Month Rolling Average ‡	mg/L			*	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> .						
eDMR Limit Set: A						
EFFLUENT PARAMETERS	UNITS	ANNUAL AVERAGE			MEASUREMENT FREQUENCY	SAMPLE TYPE
Phosphorus, Annual Average Σ	mg/L	1.0			once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 20XX</u> .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

 Ω Total flow is measured and submitted to the department for purposes of calculating statewide mass-based loading. \ddagger 12-Month Rolling Average is calculated by averaging the previous 12 monthly averages from the calendar year. Σ The annual average concentration calculated in December of each calendar year.

Permit Example #2 – Mass-Based Compliance

Interim Table #1 (For facilities which do not have sufficient data, applicable prior to implementation date)

OUTFALL #00X	TABLE A-1 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the interim effluent limitations outlined in Table A-1 must be achieved as soon as possible but no later than <u>Effective Date + X years</u> . These interim effluent limitations in Table A-1 are effective beginning <u>Effective Date</u> and remain in effect through <u>Effective date + X years – 1 day</u> or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	measured
EFFLUENT PARAMETERS	UNITS	DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading.

£ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG.

Permit Example #2 – Mass-Based Compliance, continued*Interim Table #2 (For facilities which have sufficient data, applicable prior to implementation date)*

OUTFALL #00X	TABLE A-2 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than Effective Date + X years . These interim effluent limitations in Table A-2 are effective beginning Effective Date + X years and remain in effect through Effective date + X years – 1 day or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	calculated
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
Phosphorus 12-Month Rolling Total ‡	lbs/year		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> .						
eDMR Limit Set: A						
EFFLUENT PARAMETERS	UNITS	ANNUAL TOTAL			MEASUREMENT FREQUENCY	SAMPLE TYPE
Phosphorus Annual Total Σ	lbs/year	*			once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

 Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading. £ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG. \ddagger 12-Month Rolling Total is a calculated by summing the monthly totals (lbs/month) of the previous 12 months. Σ The Phosphorus Annual Total is the total pounds of total phosphorus released by the facility within the reporting year (January – December).

Permit Example #2 – Mass-Based Compliance, continued*Final Table*

OUTFALL #00X	TABLE A-3 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations in Table A-3 shall become effective on <u>Effective Date + X years</u> and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	calculated
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
Phosphorus 12-Month Rolling Total ‡	lbs/year		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
eDMR Limit Set: A						
EFFLUENT PARAMETERS	UNITS	ANNUAL TOTAL			MEASUREMENT FREQUENCY	SAMPLE TYPE
Phosphorus Annual Total Σ	lbs/year	xxx.x Lbs {based on 1.0mg/L OR % reduction OR X years of representative actual flow data}			once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>MARCH 28, 20XX</u> .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

 Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading. £ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG. \ddagger 12-Month Rolling Total is a calculated by summing the monthly totals (lbs/month) of the previous 12 months. Σ The Phosphorus Annual Total is the total pounds of total phosphorus released by the facility within the reporting year (January – December).

Permit Example #3 – Mass-Based Compliance -Trading*Interim Table #1 (For facilities which do not have sufficient data, applicable prior to implementation date)*

OUTFALL #00X	TABLE A-1 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the interim effluent limitations outlined in Table A-1 must be achieved as soon as possible but no later than Effective Date + X years . These interim effluent limitations in Table A-1 are effective beginning Effective Date and remain in effect through Effective date + X years – 1 day or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	measured
EFFLUENT PARAMETERS	UNITS	DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MONTH 28, 20XX .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading.

£ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG.

Permit Example #3 – Mass-Based Compliance - Trading, continued*Interim Table #2 (For facilities which have sufficient data, applicable prior to implementation date)*

OUTFALL #00X	TABLE A-2 INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than Effective Date + X years . These interim effluent limitations in Table A-2 are effective beginning Effective Date + X years and remain in effect through Effective date + X years – 1 day or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	calculated
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
Phosphorus 12-Month Rolling Total ‡	lbs/year		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MONTH 28, 20XX .						
eDMR Limit Set: A						
EFFLUENT PARAMETERS	UNITS	ANNUAL TOTAL			MEASUREMENT FREQUENCY	SAMPLE TYPE
Annual Phosphorus Credits ¥	lbs.	*			once/year	documented
eDMR Limit Set: MA						
Phosphorus Annual Total, After-Credit Limit (ACL) X	lbs/year	*			once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY ; THE FIRST REPORT IS DUE MONTH 28, 20XX .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

 Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading. £ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG. \ddagger 12-Month Rolling Total is a calculated by summing the monthly totals (lbs/month) of the previous 12 months. ¥ See Special Condition X. The annual phosphorus credit is officially applied in the December final calculation, reported January 28 of the following year or during the Annual Reconciliation Period ending March 28. The annual expected phosphorus credit may be entered for January-November for monitoring the 12-Month Rolling Total, with the credit applied. For the XXX Trading Zone, annual phosphorus credits may not be used to meet permit requirements within the trading zone XXX years after the year of generation. X The Phosphorus Annual Total, After Credit Limit (ACL) value is calculated by reducing the facility's actual annual effluent phosphorus load for the reporting year (January – December) by the documented nutrient credit used. The ACL is the value evaluated for compliance in December of each year with the limit established in accordance with 10 CSR 20-7.015(9)(B)2.

Permit Example #3 – Mass-Based Compliance - Trading, continued

Final Table

OUTFALL #00X	TABLE A-3 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations in Table A-3 shall become effective on <u>Effective Date + X years</u> and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:						
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY TOTAL	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Total Flow Ω	MG		*		once/month	calculated
Phosphorus, Total	mg/L	*		*	once/week	composite**
Phosphorus, Total £	lbs/month		*		once/month	calculated
Phosphorus 12-Month Rolling Total ‡	lbs/year		*		once/month	calculated
Phosphorus 12-Month Rolling Total, After-Credit Limit (ACL) X	lbs/year		*		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MONTH 28, 20XX</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
eDMR Limit Set: A						
EFFLUENT PARAMETERS	UNITS	ANNUAL TOTAL			MEASUREMENT FREQUENCY	SAMPLE TYPE
Annual Phosphorus Credits ¥	lbs/year	*			once/year	documented
eDMR Limit Set: MA						
Phosphorus Annual Total, After-Credit Limit (ACL) X	lbs/year	xxx.x Lbs {based on 1.0mg/L OR % reduction OR X years of representative actual flow data}			once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>MARCH 28, 20XX</u> .						

* Monitoring and reporting requirement only

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

 Ω Total flow is measured and submitted to the department for purposes of calculating facility specific, and statewide mass-based loading. £ The facility shall calculate lbs/month by using the monthly average concentration of TP in mg/L * 8.34 lbs/gallon * total monthly flow in MG. \ddagger 12-Month Rolling Total is a calculated by summing the monthly totals (lbs/month) of the previous 12 months. ¥ See Special Condition X. The annual phosphorus credit is officially applied in the December final calculation, reported in January of the following year or during the Annual Reconciliation Period ending March 28. The annual expected phosphorus credit may be entered for January-November for monitoring the 12-Month Rolling Total, with the credit applied. For the XXX Trading Zone, annual phosphorus credits may not be used to meet permit requirements within the trading zone XXX years after the year of generation. X The Phosphorus Annual Total, After Credit Limit (ACL) value is calculated by reducing the facility's actual annual effluent phosphorus load for the reporting year (January – December) by the documented nutrient credit used. The

ACL is the value evaluated for compliance in December of each year with the limit established in accordance with 10 CSR 20-7.015(9)(B)2.